

CLAIMS

- 1 1 An apparatus for detecting cracks in optical discs, said disc having
2 an outer edge and an inner edge, said device comprising :
3 a disc drive for spinning said optical disc;
4 at least one transmitter for propagating a light signal through the
5 interior of said optical disc;
6 at least one receiver for receiving said propagated light
7 emerging from said disc; and
8 a microcontroller coupled to said receiver for analysing signals
9 received thereof.
- 1 2 A system according to claim 1 wherein said light signal is
2 propagated across the plane of said disc and in a direction
3 approximately tangential to the inner edge of said disc, the closest
4 distance between the path of said propagated light and said inner
5 edge being the length of shortest crack to be detected.
- 1 3 A system according to claim 2 wherein said receiver is adapted to
2 receive unreflected propagated signals emerging from said disc.
- 1 4 A system according to claim 2 wherein said receiver is adapted to
2 received propagated signals reflected by at least one crack in said
3 disc.

1 5 A system according to claim 1 wherein said light signal is
2 propagated along a path that traverses the plane of said optical
3 disc, said path traversing said disc at a position proximate said
4 inner edge.

1 6 A system according to claim 5 wherein said receiver is adapted to
2 receive uninterrupted propagated signals emerging from said disc.

1 7 A system according to claim 5 wherein said receiver is adapted to
2 received propagated signals reflected by at least one crack in said
3 disc.

1 8 An optical disc drive comprising a traverse mechanism for spinning
2 said disc and retrieving information from said disc, a loader
3 mechanism for loading said disc onto said traverse mechanism,
4 and a crack detection mechanism, said crack detection mechanism
5 comprising:

6 a transmitter, mounted on said disc drive, for propagating a light
7 signal through the interior of said spinning optical disc; and

8 a receiver mounted on said disc drive and having a light sensor
9 positioned to receive unreflected propagated light emerging from
10 said disc; and

11 a microcontroller, coupled to said receiver, for analysing signals
12 received thereof.

1 9 An optical disc drive comprising a traverse mechanism for spinning
2 said disc and retrieving information from said disc, a loader
3 mechanism for loading said disc onto said traverse mechanism,
4 and a crack detection mechanism and a microcontroller for
5 controller the operations of said drive, said crack detection
6 mechanism comprising:

7 a transmitter for propagating a light signal through the interior of
8 said spinning optical disc; and

9 a receiver comprising a receiving mechanism mounted on said disc
10 drive at a position that is adapted to receive reflected propagated
11 light emerging from said disc, said reflected propagated light
12 generated by a crack positioned along the path of said propagated
13 light.

1 10 A method for detecting cracks in optical discs comprising :

2 rotating said optical disc;

3 propagating an optical signal through said rotating optical disc;

4 receiving said propagated signal; and

5 analysing the pattern of the received signal to determine if a
6 crack is present in said optical disc.

1 11 A method for detecting cracks in optical discs comprising:

2 loading said optical disc into a disc drive;

3 rotating said disc drive at a low speed;
4 propagating an optical signal through said optical disc;
5 receiving said propagated signal from said optical disc;
6 analysing said received signal to determine if a crack is
7 present on said optical disc; and
8 sending the appropriate command to said disc drive.

1 12 A method according to claim 11 wherein a crack is present in said
2 disc, and said command comprises:

3 sending information to the user to indicate that a crack
4 has been detected; and
5 requesting said user to select between a first and a
6 second option, said first option comprising maintaining
7 said optical disc rotating in a slow speed, and retrieving
8 information from said optical disc, said second option
9 comprising stopping said rotation.

1 13 A method according to claim 10 said optical signal is further
2 propagated along a path that is approximately tangential to the inner
3 edge of said disc.

1 14 A method according to claim 10 wherein said light signal is
2 propagated along a path that traverses the plane of said optical

3 disc, said path traversing said disc at a position proximate said
4 inner edge.

1 15 A method according to claim 11 wherein said crack radiates from
2 the inner edge of said disc; said optical signal is further propagated
3 along a path that is approximately tangential to the inner edge of
4 said disc, the closest distance between said path and said inner
5 edge being the length of the shortest crack to be detected.

1 16 A method according to claim 11 wherein said light signal is
2 propagated along a path that traverses the plane of said optical
3 disc, said path traversing said disc at a position proximate said
4 inner edge.

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